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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| EXAMINER |
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STACOVICI, STEFAN

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| ART UNIT | PAPER NUMBER |
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1732

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/795,858 | MATAYA, ROBERT F. | |
| | Examiner | Art Unit | |
| | Stefan Staicovici | 1732 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-24 and 26-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-24 and 26-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed 9/29/2005 and 10/12/2005 have been entered. Claims 1-2, 4-24 and 26-56 are pending in the instant application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 42, 47 and 55 are rejected under 35 U.S.C. 102(a) as being anticipated by Crane *et al.* (US 2003/0122285 A1).

Crane *et al.* (US 2003/0122285 A1) teach the claimed mold (10) having a mold base (12) and a mold member flexible structure (20) that seals to an edge (14) of said base mold (12) to form said mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) (seal engaging surface) that extends downward from the body of the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal), wherein the seal has a vacuum channel (28)(distribution channel) defined by wall (30) and additional walls (32, 34) that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Further, Crane *et al.* (US 2003/0122285 A1) teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order

for the invention to function as described. Furthermore, Crane *et al.* (US 2003/0122285 A1) teach that said mold member (20) covers a fiber reinforced preform, hence forming an interface-molding surface.

Regarding claim 47, because Crane *et al.* (US 2003/0122285 A1) teach a plurality of vacuum channels formed by a plurality of walls, it is submitted that said seal forms a grid of sidewall flanges (see Figure 3).

Claim Rejections - 35 USC § 102

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 4-24 and 26-40, 43-46, 48-52, 54 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663).

Crane *et al.* (US 2003/0122285 A1) teach the basic claimed mold member (20) having a flexible structure that seals to an edge (14) of a base mold (12) to form a mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) that extends downward from the body of the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal), wherein the seal has a vacuum channel (28) (distribution channel) defined by wall (30) and additional walls (32, 34)

that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Crane *et al.* (US 2003/0122285 A1) also teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described. Further, Crane *et al.* (US 2003/0122285 A1) teach a molding process including, providing a flexible mold member having a plurality vacuum distribution channels molded therethrough, placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through to impregnate said fiber reinforced preform and form a fiber composite component (see claim 1).

Regarding claims 1-2, 12-15, 23-24, 30-31, 34, 39-40, 43 and 52, although Crane *et al.* (US 2003/0122285 A1) teach a resin port, a vacuum port and multiple vacuum distribution channels, Crane *et al.* (US 2003/0122285 A1) do not teach flowing resin through multiple resin channels formed therein. Seemann ('663) teaches a boat building (boat hull molding) molding process and apparatus including, providing a reusable flexible mold member having a plurality of resin distribution channels molded therethrough (see col. 6, lines 7-11), placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber reinforced preform and form a fiber composite component. Therefore, it would have been obvious for one of ordinary skill in the art to have provided multiple resin distribution channels as taught by Seemann ('663) to the mold member of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such a

multiple resin distribution channels provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

In regard to claim 7, because Crane *et al.* (US 2003/0122285 A1) teach a plurality of vacuum channels formed by a plurality of walls, it is submitted that said seal forms a grid of sidewall flanges (see Figure 3).

Specifically regarding claims 4, 16, 26 and 35 and 44, Crane *et al.* (US 2003/0122285 A1) does not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663) teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member and process of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such a standoff provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Regarding claims 5-6, 13, 17, 27, 32, 41, 45-46, 54 and 56, although Crane *et al.* (US 2003/0122285 A1) teach that said mold member is made from a resilient, durable material, such as silicone rubber, Crane *et al.* (US 2003/0122285 A1) do not teach a polyurethane material (aromatic, aliphatic, polyaspartic). Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14). Therefore, it would have been obvious for one of ordinary skill in the art to have used a polyurethane rubber as taught by Seemann ('663) to build the mold member in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) because Seemann

(‘663) specifically teaches that silicone rubber and polyurethane rubber are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14), whereas Crane *et al.* (US 2003/0122285 A1) suggests using other materials besides silicone rubber as long as said materials are a resilient, durable material. It is submitted that polyurethane rubber is a resilient, durable material. Further, it is noted that spraying a polyurethane material is well known. Therefore, it would have been obvious for one of ordinary skill in the art to have use a spraying step to form the flexible mold member (vacuum bag) in the process of Crane *et al.* (US 2003/0122285 A1) in view of Seemann (‘663) because spraying a polyurethane material is well known to provide advantages such as reduced cost, reduced waste, ease of operation, etc.

In regard to claims 8-11, 19-22, 28-29 and 36-38 and 48-51, Crane *et al.* (US 2003/0122285 A1) do not teach a first region having an increased rigidity and/or an increased strength by applying a reinforcing material. Seemann (‘663) teaches a molding process and apparatus, including providing regions of increased thickness (see col. 5, lines 25-32) and increased nylon reinforcing (see col. 5, lines 47-50). Further, Seemann (‘663) teaches that the pattern of said multiple resin distribution channels is determined by the design characteristics of the resulting molded part (see col. 6, line 39-44). Therefore, it would have been obvious for one of ordinary skill in the art to have provided regions of increased thickness (increased rigidity) and/or increased strength as taught by Seemann (‘663) in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) because, Seemann (‘663) teaches that an increased thickness and/or strength provides for an improved mold member by preventing collapse during vacuum.

Further, regarding claim 31, it is noted that Crane *et al.* (US 2003/0122285 A1) teach drawing a vacuum to seal said flexible member against said mold tool (base)(first vacuum) and also to evacuate gas/air from the space between said flexible member and said mold tool (base) (second vacuum).

In regard to claim 33, Crane *et al.* (US 2003/0122285 A1) teach multiple vacuum channels (see paragraph [0052], lines 11-12) extending downward for the body of the mold member (20), the perimeter seal enclosing the entire mold member on each side, hence multiple seals being formed. It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described.

Specifically regarding claim 18, because Crane *et al.* (US 2003/0122285 A1) teach a plurality of vacuum channels formed by a plurality of walls, it is submitted that said seal forms a grid of sidewall flanges (see Figure 3).

6. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Hooper (US Patent No. 5,576,030).

Crane *et al.* (US 2003/0122285 A1) teach the basic claimed mold as shown above. Although Crane *et al.* (US 2003/0122285 A1) teach drawing a vacuum to seal said flexible member against said mold tool (base)(first vacuum) and also to evacuate gas/air from the space between said flexible member and said mold tool (base) (second vacuum), Crane *et al.* (US 2003/0122285 A1) do not teach a first and a second vacuum port. Hooper ('030) teaches a molding system including first vacuum ports (16) for sealing and a second vacuum port (44) for forming a vacuum envelope (see col. 4, lines 43-50 and col. 5, lines 15-30). Therefore, it would

have been obvious for one of ordinary skill in the art to have provided a second vacuum port as taught by Hooper ('030) in the mold system of Crane *et al.* (US 2003/0122285 A1) because of known advantages that a plurality of vacuum ports provides such as reduced processing time, increase vacuum levels that result in reduced porosity and improved characteristics of the resulting molded product.

Response to Arguments

7. Applicant's remarks filed 9/29/2005 and 10/12/2005 have been considered.

In response to Applicant's arguments that "Crane does not teach or suggest that the distribution channels for distributing vacuum are formed upon the interfacing surface of the sheet" and that "Seemann does not teach or suggest a flexible body structure having an interface surface upon which one or more distribution channels for distributing resin and vacuum and are formed and extend therefrom" (see pages 15-17 of the amendment filed 9/29/05 and pages 3-5 of the amendment filed 10/12/05) it is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Crane *et al.* (US 2003/0122285 A1) teach a mold member (20) having a flexible structure that seals to an edge (14) of a base mold (12) to form a mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) that extends downward from the body of the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal),

wherein the seal has a vacuum channel (28) (distribution channel) defined by wall (30) and additional walls (32, 34) that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Crane *et al.* (US 2003/0122285 A1) also teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described. Further, Crane *et al.* (US 2003/0122285 A1) teach a molding process including, providing a flexible mold member having a plurality vacuum distribution channels molded therethrough, placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through to impregnate said fiber reinforced preform and form a fiber composite component (see claim 1). Crane *et al.* (US 2003/0122285 A1) do not teach flowing resin through multiple resin channels formed in the mold member. Seemann ('663) teaches a boat building (boat hull molding) molding process and apparatus including, providing a reusable flexible mold member having a plurality of resin distribution channels molded therethrough (see col. 6, lines 7-11), placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber reinforced preform and form a fiber composite component. Therefore, it would have been obvious for one of ordinary skill in the art to have provided multiple resin distribution channels as taught by Seemann ('663) to the mold member of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such

a multiple resin distribution channels provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

It is noted that Applicant's arguments are drawn to newly claimed subject matter not previously presented that has been rejected as set forth above.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD


Primary Examiner 12/27/05

AU 1732

December 27, 2005